INSIGHT DAILY CURRENT AFFAIRS

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73, Old Rajinder Nagar, New Delhi-110060
Ph: 011-45090051, 9818333201, 9871216382

What 'viral spillover risk' means, and how it could lead to new pandemics

Why in the news?

- The effects of climate change range are being witnessed across a range of environments – from **changes in crop yields** due to unreliable weather conditions to the extinction of species. According to new research, yet another effect could be the **increased risk of "viral spillover"** in some regions that could cause new pandemics over the next few years.
- Climate change could shift the species range of certain viral vectors and reservoirs northwards, and the High Arctic zone could become fertile ground for emerging pandemics.

- This result was drawn from a research article titled, **'Viral spillover risk increases with climate change in High Arctic Lake sediments'**, which was published Wednesday (October 19) in Proceedings of the Royal Society B, the biological research journal of the UK's The Royal Society.

What is viral spillover?

- Viruses are some of the most abundant entities on earth, but they need to **infect a host's cell in order to replicate.** According to the research, these virus/host relationships seem relatively stable within super kingdoms, the major groupings of organisms. However, below this rank, viruses may infect a new host from a reservoir host (in which it usually resides) by being able to transmit sustainably in a novel host – **a process defined as 'viral spillover'**.

The study

- To study the possibility of a viral spillover, researchers from the University of Ottawa collected sediment and soil samples from Lake Hazen in Canada – the **largest High Arctic lake** by volume in the world, and the region's largest freshwater ecosystem.
- Then they undertook DNA and RNA sequencing to reconstruct the lake area's virus composition. They estimated the spillover risk and found that the **chances of a virus moving to a new host increases** with runoff from glacier melt, treated by them as a proxy for climate change. As temperatures increase, the melting of glaciers increases as well, and there is a greater possibility for previously ice-trapped viruses and bacteria to find new hosts.
- This is because there is another important link in the process. As long as viruses and their 'bridge vectors' – that act as hosts and lead to their spread – are not simultaneously present in the environment, the likelihood of dramatic events probably remains low. However, that does not by itself signal relief.
- The authors said, "Climate change leads to shifts in species ranges and distributions, new associations can emerge, bringing in vectors that can mediate viral spillovers, as simulations recently highlight."

Source: Indian Express